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**ABSTRACT**

A system and method for determining a remaining life estimate of the remaining battery life of a battery of an implantable medical device (IMD). The IMD battery preferably exhibits a highly reproducible monotonically decreasing discharge curve. The estimated remaining life estimates are derived by periodically measuring battery voltage, and estimating the estimated past current drain of the IMD comprising an average of the sum of the quiescent current drain and therapy delivery current drain, and determining the estimated remaining longevity from the measured voltage and the estimated past current drain.